

input means for receiving a plurality of different digital signals to be transmitted, said different signals to be transmitted on different carrier frequencies;

modulators for modulating said different signals at the respective frequencies;

amplifier means for receiving a composite signal comprising said different signals at the respective carrier frequencies and amplifying said composite signal; and

predistortion means for predistorting said plurality of digital signals during or after modulation of said different signals by said modulators and prior to amplification of the composite signal by said amplification means, said predistortion provided by said predistortion means being subsequently altered in dependence on the difference between said input signals and the output at said amplifier means.

24. (NEW) A transmitter as claimed in claim 23, wherein said input means are arranged to separately receive each of said different signals.

25. (NEW) A transmitter as claimed in claim 23, wherein combiner means are provided between the input means and the amplifier means for combining said plurality of different signals to provide a composite signal.

26. (NEW) A transmitter as claimed in claim 23, wherein the predistortion means are arranged to predistort individually each of the plurality of different signals.

27. (NEW) A transmitter as claimed in claim 26, wherein said predistortion means predistorts said signals before the plurality of different signals are combined by said combiner.

28. (NEW) A transmitter as claimed in claim 25, wherein the predistortion means is arranged to predistort the composite signal after the plurality of signals have been combined by the combiner.

29. (NEW) A transmitter as claimed in claim 23, comprising a feedback path arranged between the amplifying means and the predistorting means.

30. (NEW) A transmitter as claimed in claim 29, wherein the predistorting means is arranged to compare the output from the amplifying means from the feedback path with the signals received by the receiving means and to provide, if necessary, at least one new predistortion value to be applied to at least one subsequent signal received by said receiving means.

31. (NEW) A transmitter as claimed in claim 29, wherein means are provided in said feedback path for separating the output of the amplifying means into the plurality of different signals.

32. (NEW) A transmitter as claimed in claim 31, wherein the predistorting means is arranged to compare each of said separated signals with the corresponding

signal received from said input means and to determine if the at least one predistortion value needs to be altered.

33. (NEW) A transmitter as claimed in claim 29, wherein said predistorting means is arranged to compare the composite signal from the amplifying means with the plurality of different signals to provide, if necessary, the at least one new predistortion value.

34. (NEW) A transmitter as claimed in claim 23, wherein said predistortion means are arranged to provide a plurality of predistortion coefficients, at least one predistortion coefficient being provided for each multicarrier frequency.

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P35. (NEW) A transmitter as claimed in claim 34, wherein said predistortion coefficients for each multicarrier frequency takes into account characteristics of other of said multicarrier frequencies.

36. (NEW) A transmitter as claimed in claim 35, wherein said characteristics comprise one or more of the following:  
frequency; and distortion.

37. (NEW) A transmitter as claimed in claim 23, wherein the amplifier means comprises a nonlinear amplifier.

38. (NEW) A transmitter as claimed in claim 37, wherein said predistortion means is arranged to compensate for the nonlinearity of the phase and/or amplitude of the amplifier.

39. (NEW) A transmitter as claimed in claim 23, wherein digital to analogue convertor means are provided for converting said plurality of signals to analogue form before said signals are amplified by said amplifier means.

40. (NEW) A transmitter as claimed in claim 30, wherein analogue to digital convertor means are provided for converting the output from the feedback path to digital format prior to the output of the feedback path being input to said predistorting means.

41. (NEW) A transmitter as claimed in claim 31, wherein analogue to digital converter means are provided for converting the output of the feedback path to digital format prior to the separating means separating the output of the feedback path into a plurality of different signals.

42. (NEW) A base station comprising a transmitter as claimed in claim 23.

43. (NEW) A mobile station comprising a transmitter as claimed in claim 23.